Author Meets NASA Scientist:
Turning Imagination into Reality
Author/Artist Chris Van Allsburg and NASA Scientist Jennifer Keyes

Description: The distance learning events provide an opportunity for language arts and science teachers to work together to challenge their students to combine science and imagination as they create stories of their own. Through three 60-minute webcasts, two for students and one for teachers, participants will view Author/Artist Chris Van Allsburg and NASA Scientist Jennifer Keyes sharing their thoughts about imagination in art and exploration. Join the Webcast to learn how space exploration can inspire young people to reach beyond themselves.

Webcast Dates and Times:

(Registration is not required for the Webcasts.)

November 16, 2005

You can watch via Webcast at the following times:

Webcast – 10 a.m. ET Student Event
Webcast – 1 p.m. ET Student Event
Webcast – 3:30 p.m. ET Teacher Event

(You will need the most recent version of RealPlayer to view the Webcast. Visit the tools and plug-ins page for the free download link to RealPlayer. To improve the quality of your RealPlayer, please follow the instructions provided here. You can then test your RealPlayer by selecting one of the dates shown above.)

Grade Levels: 3-8

Focus Question: How can science facts and creative writing be combined to inspire students to write stories about space exploration?

Instructional Objectives: After viewing ***Author Meets NASA Scientist: Turning Imagination into Reality*** NASA Digital Learning Network™ event, students will write a short story that includes at least three science facts. Students will be encouraged to include pictures so that their chosen science facts can be more easily identified.

National Standards:

Grades 3-5: Science
Strand A: Science as Inquiry
- Has ability to do scientific inquiry
- Has understandings about scientific inquiry

Strand B: Physical Science
- Understands the properties of objects and materials
- Understands the position of and motions of objects
- Understands the motion of objects in relation to the forces applied on that object

Strand D: Earth and Space Science
- Understands the objects in the sky

- Understands the Earth's place in the Solar System

Strand E: Science and Technology
- Understands that science and technology work together
- Has basic understandings about science and technology

Strand G: History and Nature of Science
- Understands that science is a human endeavor

Grades 3-5: Language Arts

1. Uses general skills and strategies to acquire new information
4. Use of spoken, written language to communicate effectively with a variety of audiences and for different purposes
5. Uses a wide range of strategies during the writing process appropriately to communicate with different audiences for a variety of purposes
8. Uses technological and information resources for research purposes

Grades 6-8: Science

Strand A: Science as Inquiry
- Has ability to do scientific inquiry
- Has understandings about scientific inquiry

Strand B: Physical Science
- Understands the motion of objects in relation to the forces applied on that object
- Understands the concept of transfer of energy

Strand D: Earth and Space Science
- Understands the Earth's place in the Solar System
- Understands that the history of the Earth has been changing in life and form

Strand E: Science and Technology
- Has basic understandings about science and technology

Strand F: Science in Personal and Social Perspectives
- Understands the potentiality of natural hazards to human society

Strand G: History and Nature of Science
- Understands that science is a human endeavor

Grades 6-8: Language Arts

1. Uses general skills and strategies to acquire new information
4. Use of spoken, written language to communicate effectively with a variety of audiences and for different purposes
5. Uses a wide range of strategies during the writing process appropriately to communicate with different audiences for a variety of purposes
8. Uses technological and information resources for research purposes

Sources

NCTE—The National Council of Teachers of English, **www.ncte.org/about/over/standards/110846.htm**
IRA—Intl. Reading Assoc., **www.reading.org/resources/issues/reports/learning_standards.html**
National Science Education Standards, **www.nap.edu/books/0309053269/html/103.html**

Pre-webcast Activity:

Materials

- Copy of ***Zathura***
- Chart paper and markers
- Recording sheet

Introduction

Tell your students that NASA has a new vision for exploration—from the Earth to the Moon, Mars, and beyond. NASA exploration programs will seek answers to profound questions about the origins of our solar system, whether life exists beyond Earth, and how we could live on other worlds. What are the next steps in this exciting new vision? Have the students go to this website to find out more: http://www.nasa.gov/audience/forkids/home/F_Vision_Slideshow_Text.html

Have your students work in small groups to brainstorm a list of objects found in our Milky Way Galaxy. Then have your students select one object from their list that they would like to further explore and write that object in the blank at the top of their recording sheet.

Next, tell your students that they will be examining the way Van Allsburg blends scientific facts about outer space with his fictional story in ***Zathura***.

Body

As a class, read the story ***Zathura*** by Chris Van Allsburg. Ask the students to notice, first of all, the particular information about space that Van Allsburg chooses to use in ***Zathura***. Record these topics on the chart paper. For example:

Topic	Description
Meteor	
Gyroscopes	

Closure

After listing the facts found in ***Zathura,*** go back into the text and examine how Van Allsburg blends scientific information within a fictional story. Record the descriptions on your chart paper. For example:

Topic	Description
Meteors	*The noise grew louder, like a thousand golf balls bouncing off the roof. The room got so dark, Walter turned on the lights. Then—KABOOM—a rock the size of a refrigerator fell through the ceiling and crushed the television.*
Gyroscope	*Suddenly the house tilted. Everything in the room slid to one side, and Danny got buried under a mountain of furniture.*

Ask the students how ***Zathura*** relates to the NASA vision for exploration. Announce to the students that they will be watching a videoconference with Author/Artist Chris Van Allsburg and NASA Scientist Jennifer Keyes to see how imagination can become reality. Have the students save their recording sheets for the Post-conference Activity.

Webcast structure:

- Host introduces guests.
- Teachers introduce their classes.
- Conversation between Van Allsburg and Keyes.
    1. What inspired them to follow their dreams?
    2. What is the role of imagination in their respective careers?
- Questions from classrooms.

- Host asks Chris for a quick tour through ***Zathura*** – pictures from the book and clips from the movie.
- Questions from the classrooms.
- Host asks Jennifer to present future concepts information and animations.
- Conclusion – Host gives the writing assignment (Combine science facts about space with imagination to create a story.)

Post-webcast Activity:

Materials

- Copy of ***Zathura***
- Chart paper from Pre-conference Activity
- Recording sheet
- Writing paper and pencils for the students

Introduction

After watching the videoconference, ask the students:

- As an author/artist, how does Van Allsburg use his imagination? As a NASA scientist, how does Jennifer Keyes use her imagination in her career?
- How does Van Allsburg use illustrations to capture the scientific concepts? How does NASA use illustrations to capture the scientific concepts?
- What new NASA missions did you learn about in the videoconference?
- What new information did you learn about Chris Van Allsburg?

Refer back to your chart paper from the Pre-conference Activity. Review how Van Allsburg used scientific facts in his fictional story.

Announce to your students that today they will begin to write a fictional story based on their scientific knowledge of outer space.

Body

Have the students take out their Recording Sheet from the Pre-conference Activity. As a class, have the students' share the objects they would like to further explore.

Using the resources from their library and http://www.nasa.gov, the students will find 6 facts about their object. They should record these facts on their recording sheets.

Next students will use Van Allsburg's craft as a model for writing their own fictional story. When children begin writing their fictional stories with a collection of information, not only will their imaginations already be stimulated by the act of research and the new things they are learning, but the information will help them to shape their stories and to integrate facts in a believable way. On their recording sheets, have the students expand and elaborate on their facts. For example:

Exploration Topic: Comets

Fact	My Description
Comets are composed of water, ice, dust and carbon- and silicon-based compounds.	As I stood in left field, a dirty snowball fell from the sky and landed beside me with a thud.

When the students have expanded upon their facts, remind your students how Van Allsburg blends these real facts about space into his fictional story about the Budwings' adventure. Tell them that in their writing today, they will have a chance to try blending facts with fiction.

The students are to write a fictional story, working in at least three scientific facts. Encourage the students to include pictures in their stories so that their chosen science facts can be more easily identified.

Closure
Have the students share their masterpieces with:

- Their peers in their classroom,
- Other classes within their school, and
- Their families at a school Family Night.

If adapting this lesson for use with less experienced writers:

- Create a story blending fact and fiction as a class.
- Use the same facts that Van Allsburg uses in his story, but ask students to make up their own space adventure tales.

Background Information:

(***Zathura's*** Teacher's Guide: **www.houghtonmifflinbooks.com/features/zathura/educators.shtml)**

***Zathura* Summary**
Danny and Walter Budwing don't get along. When their parents go out for the evening, small arguments escalate until finally Walter, the eldest, chases his little brother out of the house and into the park where he tackles him to the ground. As they wrestle, they catch sight of a board game propped up under a tree. It is called "Jumanji, a Jungle Adventure." Shoving the "baby game" at his brother, Walter heads for home with Danny trailing behind. As Walter sits down in front of the TV, Danny examines the game. Lodged underneath the Jumanji game board, the little boy finds another game board called "Zathura," decorated with exciting-looking flying saucers and planets. Danny starts to play on his on, struggling to read the first game card, "Meteor showers, take evasive action." Immediately, real meteors begin to crash down through the boys' roof! Realizing that they could not possibly still be on Earth, Danny tries hard to convince his disbelieving older brother of the power of the game. Finally, Walter agrees to play.

As they play, the game's events happen in real life – Walter sticks to the ceiling for a time when his gravity is lost. A defective robot seems bent on destroying them. Danny, affected by a gravity surplus, becomes heavy, dense and round! It is only by working together that they begin to make progress - Walter uses heavy Danny as a bowling ball to flatten the attacking robot. When Walter is swallowed up by a black hole, all seems to be lost until the boys find themselves suddenly wrestling again next to the tree in the park. Seeming not to remember the game's events, Danny wants to take it home. Walter, much the wiser for his experience, tosses the game in the trashcan and suggests a game of catch, much to his little brother's delight.

***Zathura* Special Features**
At the end of Chris Van Allsburg's Jumanji, Judy and Peter deposit the game in its box with great relief back under the tree in the park where they found it – and later see their neighbors Danny and Walter Budwing carrying the box home! After years of wondering what might have happened to the boys who didn't like to read directions, Zathura gives readers an answer! Van Allsburg's textured drawings, made with litho pencil on coquille board, show Walter and Danny as two boys full of personality – ornery and argumentative, at first. [Note: Van Allsburg actually used his own daughters as models for the Budwing boys' interactions!] While the world of Jumanji invades the home of Peter and Judy, the Budwing boys' home is transported by Zathura into outer space, where the strange events the game produces seem delightfully bizarre – a meteor in the living room, a portable black hole. The story is fast-paced and full of action, and readers will enjoy the realistic brotherly banter between the two boys as much as the description of the boys' adventures.

As in many of Van Allsburg's books, the Budwings are changed by the difficult experience they go through together. Instead of antagonizing each other, by the end of the story the boys have learned that working together is the way to solve problems, and that they can enjoy each other's company. We are left with a signature Van Allsburg ending as well – *did* the boys really go into outer space, or was it just a strange dream?

Find Fritz
Fritz is in the driver's seat of the little toy sports car perched on Danny and Walter's shelf in the bedroom.

Guiding Questions for a *Zathura* Read-aloud

- How would you describe Danny and Walter's relationship at the beginning of the book? If you have a brother or sister, can you relate to any of the things that happen between Walter and Danny?
- What is keeping Danny and Walter from getting along with each other?
- Danny helps Walter by tying him to the sofa when he is about to fly through the hole in the roof. Do you think Walter is used to being helped by his little brother? How do you think this incident starts to change Walter's perception of Danny?
- What happens between the time when Walter is swallowed by the black hole and the time when the boys find themselves wrestling on the grass in the park? How did they get there?
- How has the boys' relationship changed as a result of their experience?

Additional Resources:

Space Science: Adventure Is Waiting
A dynamic education program to build student skills for grades 3-5 and 6-8 in both science and language arts awaits. Developed in cooperation with both NASA and Scholastic, **Space Science: Adventure Is Waiting** has been generously sponsored by Columbia Pictures. Look at the website for easy-to-use national standards-based lessons and reproducibles, with inspiring images of the upcoming feature film Zathura. This adventure film is based on renowned author/illustrator Chris Van Allsburg's acclaimed children's book, published by Houghton Mifflin.
http://teacher.scholastic.com/lessonplans/spacescience/index.htm

Author Study
What was the first book Chris Van Allsburg published? What does Chris like to do for recreation? Have the students do an author study to find the answer to these questions. For more information about Van Allsburg go to: http://www.chrisvanallsburg.com/flash.html

NASA Mission: STARDUST
Stardust is the first U.S. space mission dedicated solely to the exploration of a comet, and the first robotic mission designed to return extraterrestrial material from outside the orbit of the Moon.
The Stardust spacecraft was launched on February 7, 1999, from Cape Canaveral Air Station, Florida. The primary goal of Stardust is to collect dust and carbon-based samples during its closest encounter with Comet Wild 2. In January 2006, Stardust and its precise cargo will return by parachuting a reentry capsule weighing approximately 125 pounds to the Earth's surface. To find out more about this historic mission go to: http://stardust.jpl.nasa.gov/

NASA Mission: Mars Reconnaissance Orbiter
The Mars Reconnaissance Orbiter launched August 12, 2005. It will study the history of water on Mars and will be able to look at small-scale features. Previous cameras on other Mars orbiters could identify objects no smaller than a school bus; this camera will be able to spot something as small as a dinner table. The orbiter's telecommunications systems will also establish a crucial service for future spacecraft, becoming the first link in a communications bridge back to Earth. The orbiter's telecommunications systems will become the beginning of an "interplanetary Internet" that can be used by numerous international spacecraft in coming years: http://marsprogram.jpl.nasa.gov/mro/

NASA Mission: Phoenix Mars Lander
The Phoenix Mars Lander is scheduled for launch in August 2007. Phoenix is specifically designed to measure volatiles (especially water) and complex organic molecules in the arctic plains of Mars. Phoenix is a fixed lander, using a robotic arm to dig to the ice layer and analyze samples with a suite of sophisticated on-deck scientific instruments. For more information on this future Mars Mission, go to: http://phoenix.lpl.arizona.edu/

NASA Mission: Lunar Reconnaissance Orbiter
The Lunar Reconnaissance Orbiter (LRO) is the first of the Robotic Lunar Exploration (RLE) missions, planned for launch by late Fall 2008 and will orbit the Moon nominally 1 year. The LRO mission emphasizes the overall objective of obtaining data that will facilitate returning men safely to the Moon where testing and preparations for an eventual manned mission to Mars will be undertaken. http://lunar.gsfc.nasa.gov/index.html

Blending Fact and Fiction

Blending Fact and Fiction Worksheet

Name _____

Topic I would like to further explore _____

Fact	My Description